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EXAMINER

STEADMAN, DAVID J.

ART UNIT PAPER NUMBER

1652

DATE MAILED: 06/13/2002

14

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicati n No.

09/810,521

Applicant(s)

KREUTZER ET AL.

Examin r

David J. Steadman

Art Unit

1652

-- The MAILING DATE of this c mmunication appears on the cover sheet with the c rrespondence address --

## Peri d f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 5-15, 17, 18, 21 and 24-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 16, 19, 20, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☒ Certified copies of the priority documents have been received in Application No. 09/353,608.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 & 10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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## **DETAILED ACTION**

### ***Application Status***

Claims 1-26 are pending in the application.

Applicants' election without traverse of Group I, claims 1-4, 16, 19, 20, 22, and 23, drawn to a corynebacteria with an enhanced *pyc* gene in addition to enhanced *dapA*, *lysC*, and/or *lysE* genes, wherein the *dapA* gene has the promoter of SEQ ID NO:5 (MC20) or SEQ ID NO:6 (MA16), the *Escherichia coli* of Deposit Number DSM12872, the corynebacteria of Deposit Numbers DSM 12868 and DSM 12867, and the polynucleotides of SEQ ID NOs:5 and 6 in Paper No. 12, filed 04/08/02 is acknowledged.

Claims 5-15, 17, 18, 21, and 24-26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

It is noted that an Information Disclosure Statement (Form PTO-1449) filed as Paper No. 10 on 10/18/01 has been submitted by applicants. However, references OR and PR of Paper No. 10 have not been matched with the instant application and therefore, cannot be considered as per applicants' request. The examiner has made an earnest attempt to locate the missing references without success. The examiner requests copies of the missing references and upon receipt, will consider the references and return Form PTO-1449 in a subsequent communication.

### ***Claim Objections***

1. Claims 1-3 are objected to as reciting non-elected subject matter. Specifically, the non-elected subject matter is the *dapB* gene. It is suggested that applicants remove the non-elected subject matter from the claims.
2. Claims 4, 22, and 23 are objected to because of the recitation of "SEQ ID No.". Applicants should identify a nucleic acid sequence using the proper sequence identifier "SEQ ID NO:". Appropriate correction is required.

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***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 22 and 23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are drawn to DNA having the polynucleotide sequences of SEQ ID NOs:5 and 6, respectively. The claims read on products of nature and should be amended to indicate the hand of the inventor, e.g., by insertion of "purified" or "isolated". See MPEP § 2105.

***Claim Rejections - 35 USC § 112, Second Paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claims 1-4, recites the limitations "the dapA gene", "the lysC gene", "the lysE gene", and/or "the dapB gene", "the MC20 or MA16 mutations". There is insufficient antecedent basis for these limitations in the claim.
6. The term "enhanced" in claims 1 (claim 4 dependent therefrom), 2, and 3 is unclear absent a statement defining to what the gene is being compared. The term "enhanced" is a relative term and the claim should define and clearly state as to what the gene is being compared (i.e., enhanced in comparison to what gene?). Furthermore, it is unclear as to applicants' intended meaning of the term "enhanced". It is noted that a definition of the term "enhancement" is provided in the specification at page 7 as meaning over-expressed. If applicants' intended meaning of the term "enhanced" is "overexpressed", it is suggested that, for example, applicants replace the term "enhanced" with "overexpressed".

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7. Claim 1 (claims 2-4 dependent therefrom) is unclear in the recitation of "together". It is unclear as to whether the term is meant to be interpreted as a corynebacteria with *any* of the dapA, lysC, and/or lysE genes with the pyc gene or *all* of the dapA, lysC, and lysE genes with the pyc gene. It is suggested that applicants clarify the meaning of the term.

***Claim Rejections - 35 USC § 112, First Paragraph***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-4 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 is drawn to corynebacteria comprising a genus of enhanced pyc genes and optionally comprising any of a genus of dapA, lysC, and/or lysE genes from any source. Claims 2 and 3 limit the corynebacteria to a genus of pyc and dapA genes (claim 2) or a genus of pyc, dapA, and lysE genes (claim 3) from any source. While the specification has described the function of the encoded polypeptide of a pyc, dapA, lysC, or lysE gene (see page 1, lines 11-17 of the instant specification), the specification fails to describe the structures of a pyc, dapA, lysC, or lysE gene. Given this lack of description of representative species encompassed by the genera of genes recited in the claims, the specification fails to sufficiently describe the claimed invention in such full, clear, concise, and exact terms that a skilled artisan would recognize that applicants were in possession of the claimed invention.

9. Claims 1-4 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for E. coli deposit number DSM12872 and C. glutamicum deposit numbers DSM12867 and DSM12868, does not reasonably provide enablement for *any* corynebacteria comprising *any* pyc gene enhanced by *any* method and comprising any of the following: *any* dapA, lysC, and/or lysE gene

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enhanced by *any* method isolated from *any* source and optionally wherein the corynebacteria comprise the MC20 or MA16 mutations of the dapA promoter of SEQ ID NOs:5 or 6, respectively. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required, are summarized in *In re Wands* (858 F.2d 731, 8 USPQ 2d 1400 (Fed. Cir. 1988)) as follows: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claim(s).

Claims 1-4 are so broad as to encompass *any* corynebacteria comprising *any* pyc gene enhanced by *any* method and comprising any of the following: *any* dapA, lysC, and/or lysE gene enhanced by *any* method isolated from *any* source and optionally wherein the corynebacteria comprise the MC20 or MA16 mutations of the dapA promoter of SEQ ID NOs:5 or 6, respectively. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of corynebacteria comprising pyc genes and any of dapA, lysC, and/or lysE genes and optionally comprising MC20 or MA16 mutations of the dapA promoter of SEQ ID NOs:5 or 6 broadly encompassed by the claims. In this case the disclosure is limited to *E. coli* deposit number DSM12875 and *C. glutamicum* deposit numbers DSM12867 and DSM12868.

The specification does not support the broad scope of the claims which encompass *any* corynebacteria comprising *any* pyc gene enhanced by *any* method and comprising any of the following: *any* dapA, lysC, and/or lysE gene enhanced by *any* method isolated from *any* source and optionally wherein the corynebacteria comprise the MC20 or MA16 mutations of the dapA promoter of SEQ ID NOs:5 or 6, respectively, because the specification does not establish methods of isolating *any* pyc, dapA, lysC, and/or lysE gene and optionally mutating *any* dapA promoter to have the MC20 or MA16 mutations of the dapA promoter of SEQ ID NOs:5 or 6, respectively. Applicants have only provided methods of

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isolating *pyc*, *dapA*, and *lysE* genes from *C. glutamicum* (see pages 15-17, 19, 20, and 30) using PCR (*pyc* and *lysE*) or isolation of a *dapA* gene from a previously prepared plasmid and discloses no method of isolating a *lysC* gene. Furthermore, the specific mutations of the *dapA* promoter are identified only as MC20 (SEQ ID NO:5) or MA16 (SEQ ID NO:6) without specifically identifying the location of the mutation(s) relative to the position of the *dapA* promoter such that similar mutations may be made to corresponding *dapA* promoters from other sources. Also, it is unclear as to whether the corresponding MC20 and MA16 mutations of a *dapA* promoter from another source will achieve the same result, i.e., increased lysine production as promoter sequences and regions of gene regulation within promoters vary among different organisms.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make the claimed invention in a manner reasonably correlated with the scope of the claims broadly including *any* corynebacteria comprising *any* *pyc* gene enhanced by *any* method and comprising any of the following: *any* *dapA*, *lysC*, and/or *lysE* gene enhanced by *any* method isolated from *any* source and optionally wherein the corynebacteria comprise the MC20 or MA16 mutations of the *dapA* promoter of SEQ ID NOs:5 or 6, respectively. The scope of the claims must bear a reasonable correlation with the scope of enablement (*In re Fisher*, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See *In re Wands* 858 F.2d 731, 8 USPQ2d 1400 (Fed. Cir, 1988).

10. Claims 16, 19, 20, 22, and 23 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The invention appears to employ novel vectors. Since the vectors are essential to the claimed invention, they must be obtainable by a repeatable method set forth in the specification or otherwise be readily available to the public. The claimed vector sequences are not fully disclosed, nor have all the sequences required for their construction been shown to be publicly known and freely available. The

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enablement requirements of 35 U.S.C. § 112 may be satisfied by a deposit of the microorganisms comprising the novel vectors. The specification does not disclose a repeatable process to obtain the vectors and it is not apparent if the DNA sequences are readily available to the public. Accordingly, it is deemed that a deposit of these vectors should have been made in accordance with 37 CFR 1.801-1.809.

It is noted that applicants appear to have deposited the microorganisms in accordance with the Budapest Treaty (pages 14-15 of the instant specification) but there is no indication in the specification as to public availability. Since the deposit appears to have been made under the terms of the Budapest Treaty, an affidavit or declaration by applicants, or a statement by an attorney of record over his or her signature and registration number, stating that the specific microorganisms have been deposited under the Budapest Treaty and that the strain will be irrevocably and without restriction or condition released to the public upon the issuance of the patent, would satisfy the deposit requirement made herein.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters-Wendisch et al. (IDS reference OR; DE 19831609, published 04/15/1999, hereafter referred to as "Peters-Windisch") in view of Cremer et al. (IDS reference QR; EP 0435132, published 07/03/91, hereafter referred to as "Cremer") and Araki et al. (IDS reference RR; EP 0854189, published 07/22/1998, hereafter referred to as "Araki"). Claim 1 is drawn to a corynebacteria with an enhanced *pyc* gene and additionally any of the *dapA*, *lysC* and/or *lysE* genes are enhanced. Claim 2 limits the corynebacteria to enhanced *pyc* and *dapA* genes.



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Peters-Wendisch teaches cloning of a *C. glutamicum* pyc gene (pages 3 and 4), transformation and overexpression of *C. glutamicum* with an expression vector comprising said pyc gene (pages 4 and 5). Peters-Wendisch teaches overexpression of a *C. glutamicum* pyc gene significantly increased the yield of L-lysine in the culture medium (pages 5 and 6). Peters-Wendisch does not teach co-expression of their pyc gene with a dapA, lysC, or lysE gene.

Cremer teaches cloning of *C. glutamicum* dapA and lysC genes (page 4), transformation and overexpression of *C. glutamicum* with an expression vector comprising said dapA and lysC genes (page 5). Cremer teaches overexpression of dapA and lysC genes in *C. glutamicum* results in a moderate increase in L-lysine production (pages 5-7).

Araki teaches that overexpression of a *C. glutamicum* dapA, lysC, dapB, lysA, or aspC gene alone in a *C. glutamicum* host cell resulted in only minor increases in L-lysine yields relative to wild-type *C. glutamicum* (page 18). Araki teaches co-expression of dapA, lysC, dapB, lysA, and aspC genes increased L-lysine yields by approximately 19 grams/L relative to wild-type *C. glutamicum* after 72 hours of cell growth (page 18).

Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Peters-Wendisch and Cremer for a *C. glutamicum* with an expression vector for co-expression of pyc and dapA and/or lysC genes as methods of co-expressing genes in *C. glutamicum* for increased yields of an amino acid are well-known in the art as demonstrated by Cremer and Araki. One would have been motivated for a *C. glutamicum* with an expression vector for co-expression of pyc and dapA and/or lysC genes in order to increase the yield of L-lysine. One would have a reasonable expectation of success for a *C. glutamicum* with an expression vector for co-expression of pyc and dapA and/or lysC genes because of the results of Peters-Wendisch who taught the cloning and overexpression of pyc with increased L-lysine yields and Cremer and Araki who demonstrated synergistic increases in L-lysine due to overexpression of genes that, when expressed singly in a *C. glutamicum* host cell, result in only minor increases in L-lysine yields. Therefore, claims 1 and 2, drawn to a corynebacteria with an enhanced pyc gene and additionally

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wherein any of the dapA, lysC and/or lysE genes are enhanced and optionally limited to a corynebacteria with enhanced pyc and dapA genes would have been obvious to one of ordinary skill in the art.

12. Claims 3 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters-Wendisch in view of Cremer and Araki as applied to claims 1 and 2 above and further in view of Vrljic et al. (IDS reference PR; DE 19548222, published 06/26/97, hereafter referred to as "Vrljic"). Claim 3 limits claim 1 to corynebacteria with enhanced pyc, dapA and lysE genes. Claim 16 is drawn to E. coli deposit number DSM12872.

Peters-Wendisch, Cremer, and Araki disclose the teachings as described above. The references of Peters-Wendisch, Cremer, and Araki do not combine to teach or suggest co-expression of the pyc gene of Peters-Wendisch with a lysE gene.

Vrljic teaches isolation and cloning of a C. glutamicum lysE gene (pages 4, 5, and Figure 1), transformation of C. glutamicum with an expression vector comprising said lysE gene, and overexpression of said lysE gene in C. glutamicum (pages 5). Vrljic teaches the results of overexpression of a C. glutamicum lysE gene are increased yields of L-lysine in the culture medium due to increased export of intracellular L-lysine into the culture medium (Figures 3 and 4).

Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Peters-Wendisch, Cremer, and Vrljic for a C. glutamicum with an expression vector for co-expression of pyc, dapA, and lysE genes or pyc and lysE genes as methods of co-expressing genes in C. glutamicum for increased yields of an amino acid are well-known in the art as demonstrated by Peters-Wendisch and Araki. One would have been motivated for a C. glutamicum with an expression vector for co-expression of pyc, dapA, and lysE genes or pyc and lysE genes in order to increase the yield of L-lysine. One would have a reasonable expectation of success for a C. glutamicum with an expression vector for co-expression of pyc, dapA, and lysE genes or pyc and lysE genes because of the results of Peters-Wendisch who taught the cloning and overexpression of pyc with increased L-lysine yields, Vrljic who taught the cloning and overexpression of lysE with increased L-lysine yields, and Cremer and Araki who demonstrated synergistic increases in L-lysine due to overexpression of genes that, when expressed

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alone, result in only minor increases in L-lysine yields. Therefore, claims 3 and 16, drawn to a corynebacteria with an enhanced *pyc* gene and enhanced *dapA* and *lysE* genes or the plasmid contained in *E. coli* deposit number DSM12872 would have been obvious to one of ordinary skill in the art.

### ***Double Patenting***

13. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 19 and 20 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 12 and 13, respectively, of U.S. Patent No. 6,200,785 ('785). This is a double patenting rejection. Claim 19 of the instant application is identical in scope to claim 12 of '785 and claim 20 of the instant application is identical in scope to claim 13 of '785.

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 3, and 4 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, and 5 of U.S. Patent No. 6,200,785 ('785). Although the conflicting claims are not identical, they are not patentably distinct from each other because the patent and the application are claiming common subject matter, as follows: In the instant application, claim 1 is drawn to a corynebacteria with an enhanced *pyc* gene and additionally any of the *dapA*, *lysC*

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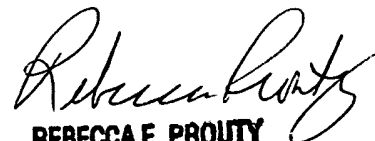
and/or lysE genes are enhanced. Claim 3 limits the corynebacteria to enhanced pyc, dapA, and lysE genes. Claim 4 limits the corynebacteria of claim 1 to having the mutations of the dapA promoter of SEQ ID NOs:5 and 6. The subject matter of claims 1, 3, and 4 of the instant application is identical to the subject matter of claims 1, 4, and 5 of '785 except the corynebacteria of claim 1 of '785 requires an amplified lysE gene and additionally amplification of any of dapA, lysC, pyc, and/or dapB genes and claim 5 limits the genes to being amplified through overexpression. Also, claim 3 of the instant application is limited to a corynebacteria with enhanced pyc, dapA, and lysE genes. Therefore, claims 1, 3, and 4 of the instant application would have been obvious over claims 1, 4, and 5 to one of ordinary skill in the art.

### ***Conclusion***

15. All claims are rejected. No claim is in condition for allowance.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Steadman, whose telephone number is (703) 308-3934. The Examiner can normally be reached Monday-Friday from 7:30 am to 2:00 pm and from 3:30 pm to 5:30 pm. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (703) 308-3804. The FAX number for this Group is (703) 308-4242. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Art Unit receptionist whose telephone number is (703) 308-0196.

David J. Steadman, Ph.D.

  
**REBECCA E. PROUTY**  
**PRIMARY EXAMINER**  
**GROUP 1800**  
1605